

Complete Summary

GUIDELINE TITLE

Newborn hearing screening: recommendations and rationale.

BIBLIOGRAPHIC SOURCE(S)

Newborn hearing screening: recommendations and rationale. Am Fam Physician
2001 Dec 15;64(12):1995-9. [20 references]

COMPLETE SUMMARY CONTENT

SCOPE

METHODOLOGY - including Rating Scheme and Cost Analysis

RECOMMENDATIONS

EVIDENCE SUPPORTING THE RECOMMENDATIONS

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

QUALIFYING STATEMENTS

IMPLEMENTATION OF THE GUIDELINE

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT

CATEGORIES

IDENTIFYING INFORMATION AND AVAILABILITY

SCOPE

DISEASE/CONDITION(S)

Hearing loss

GUIDELINE CATEGORY

Screening

CLINICAL SPECIALTY

Family Practice

Otolaryngology

Pediatrics

Preventive Medicine

INTENDED USERS

Advanced Practice Nurses

Nurses

Physician Assistants

Physicians
Speech-Language Pathologists

GUIDELINE OBJECTIVE(S)

To summarize the third US Preventive Services Task Force (USPSTF) recommendations on newborn hearing screening and the supporting evidence, and update the 1995 recommendations contained in the Guide to Clinical Preventive Services, second edition

TARGET POPULATION

Newborn infants

INTERVENTIONS AND PRACTICES CONSIDERED

Screening

1. Universal newborn hearing screening programs

Screening Tests

1. Otoacoustic emissions (OAE) test
2. Auditory brainstem response (ABR) test
3. Two-stage testing, such as otoacoustic emissions repeated twice, otoacoustic emissions followed by auditory brainstem response, or automated auditory brainstem response repeated twice

MAJOR OUTCOMES CONSIDERED

- Identification and early treatment of congenitally acquired hearing loss
- Sensitivity, specificity, and predictive value of screening tools
- Language and communication skills
- Adverse effects of false positive and false negative tests

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

To find relevant articles on screening for hearing impairment, the MEDLINE, CINAHL, and PsycINFO databases were searched for papers published from 1994 to September 2000. Reference lists of comprehensive review articles and expert recommendations were used to locate additional articles published after 1994. The Evidence-Based Practice Center group relied on the 1995 United States Preventive

Services Task Force's review and suggestions of experts and peer reviewers to identify important articles published in 1994 or earlier. Searches were updated monthly through August 2001.

Searches of the electronic databases returned 864 abstracts. Two investigators reviewed each abstract to determine whether to obtain the full text of the article. Disagreement was resolved by discussion. Abstracts were included if both reviewers agreed that the topic was relevant to one of the key questions and the article contained data. Abstracts were also included if there was not sufficient information to classify the article. The full-text versions of 177 articles from the searches and about 30 articles from other sources were obtained and examined by 2 reviewers for inclusion in evidence tables.

Full-text articles were included in the systematic review if they were 1) controlled trials, 2) reports on the accuracy, yield, or harms of screening from state-based, population-based studies, or hospital-based universal newborn hearing screening programs using auditory brainstem response or otoacoustic emissions technology in the general newborn population, or 3) reports of the effects of screening, early identification and treatment, or any type of language outcomes. For the last group, uncontrolled case series and case reports were excluded. The Evidence-Based Practice Center group excluded studies in which screening was done with physical examination or with tests other than auditory brainstem response or otoacoustic emissions. They also included studies that reported any information about the adverse effects of screening or early diagnosis, but did not attempt to review the adverse effects of hearing aids and cochlear implants.

For additional details see the companion document: Helfand M, Thompson DC, Davis R, McPhillips H, Homer CJ, Lieu TA. Newborn Hearing Screening: Systematic Evidence Review. Pub. No. AHRQ02-S001. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ), 2001.

NUMBER OF SOURCE DOCUMENTS

Searches of the electronic databases returned 864 abstracts. Full-text versions of 177 articles from the searches and about 30 articles from other sources were obtained and examined. Twenty-two articles met inclusion criteria.

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

The U.S. Preventive Services Task Force (USPSTF) grades the quality of the overall evidence on a 3-point scale (good, fair, or poor).

Good

Evidence includes consistent results from well-designed, well-conducted studies in representative populations that directly assess effects on health outcomes.

Fair

Evidence is sufficient to determine effects on health outcomes, but the strength of the evidence is limited by the number, quality, or consistency of the individual studies; generalizability to routine practice; or indirect nature of evidence on health outcomes.

Poor

Evidence is insufficient to assess the effects on health outcomes because of limited number or power of studies, important flaws in their design or conduct, gaps in the chain of evidence, or lack of information on important health outcomes.

Note: See the companion document titled "Current Methods of the U.S. Preventive Services Task Force: a Review of the Process" (Am J Prev Med 2001 Apr; 20[3S]:21-35) for a more detailed description of the methods used to assess the quality and strength of the evidence for the three strata at which the evidence was reviewed.

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Note from the National Guideline Clearinghouse (NGC): A systematic evidence review was prepared by the Oregon Health Sciences University Evidence-based Practice Center (EPC) for the Agency for Healthcare Research and Quality (AHRQ) for use by the U.S. Preventive Services Task Force (USPSTF) (see the "Companion Documents" field).

Twenty-two articles met the inclusion criteria and were abstracted using a standard electronic spreadsheet. From each of the 10 included screening studies, the following information was abstracted: year of publication, study design (randomized controlled trial, cohort, case-control, controlled case series, or time series comparisons), characteristics of patients studied (risk status, degree and type of hearing loss, age at testing), screening protocol (test used, pass criteria, follow-up screening and diagnostic testing), years of data collection, number of patients screened, number with a positive screening test, method used to make the final diagnosis and the age at which it was done, number with confirmed sensorineural hearing loss, age at diagnosis, referrals, compliance with referrals, and age at amplification. The Evidence-Based Practice Center group calculated the number of patients with a final diagnosis of bilateral sensorineural hearing loss divided by the number of neonates screened and its inverse, the number needed to screen to identify one infant with bilateral sensorineural hearing loss. Where possible, they calculated the number needed to screen in high-risk infants, who would likely be identified by high-risk screening strategies already in place, compared with low-risk infants, who would be identified early only by universal newborn hearing screening. When the information was available they also

calculated the number needed to treat for the subset of patients who had complete follow-up.

For studies of the accuracy of screening tests, the Evidence-Based Practice group defined sensitivity as the number of infants with hearing loss who screened positive divided by the actual number of infants with hearing loss. They defined specificity as the number of infants with normal hearing who screened negative divided by the total number of infants with normal hearing. They also calculated the positive predictive value as the number of infants with hearing loss who screened positive and later proved to have permanent bilateral sensorineural hearing loss divided by the number of infants who screened positive. The number and type of screening tests administered, and the criteria used to define a positive test, varied among the studies. In most programs, for example, the in-hospital phase of testing had 2 stages (e.g., an otoacoustic emission followed by an auditory brainstem response, or an auditory brainstem response repeated once), but other protocols used a single stage (e.g., one otoacoustic emission or auditory brainstem response). To be consistent across studies, they defined a screen as positive if, based on whatever tests were done by the time of discharge from the hospital, a referral for repeat testing or audiologic consultation would be recommended.

In most screening methodologies, the gold standard allows for validating the screening tool immediately, in the case of hearing, the accuracy of the gold standard, behavioral and/or audiologic evaluation, depends on the age at which it is performed. Moreover, in the months after discharge from the hospital, audiologic evaluation might be repeated several times before a definitive diagnosis can be made. With input from the Task Force, the Evidence-Based Practice Center group defined tests performed in the hospital during the birth admission as "screening" tests, and defined subsequent testing performed as part of an effort to establish the final diagnosis to be part of the follow-up evaluation.

It is possible that some cases of hearing loss could develop in the months between birth screening and the gold standard evaluation. As is done for other conditions, for example, Pap smears for cervical cancer and mammography for breast cancer, these were classified as "biological false-negative" results.

For the 8 studies evaluating the effect of screening or early treatment on speech and language outcomes, the Evidence-Based Practice Center group abstracted the following information: year of publication, study design, years of data collection, characteristics of patients studied (risk status, degree and type of hearing loss, age at testing, sociodemographic information, family characteristics, cognitive ability), definition of hearing impairment, type of treatment program, and specific tests used to measure receptive and expressive language development, as well as the test scores. Three surveys and one chart review study provided information on adverse effects of early diagnosis and treatment. They used the U.S. Preventive Services Task Force criteria for grading the quality of studies to select the methodologically strongest studies, and to grade the overall evidence for each link in the analytic framework.

The Evidence-Based Practice Center group constructed a mathematical model of the likely benefits and harms of screening 10,000 newborns. They used the

results of the literature review to estimate prevalence, sensitivity and specificity, compliance, treatment effect size, and other parameters of the model.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Balance Sheets
Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

When the overall quality of the evidence is judged to be good or fair, the U.S. Preventive Services Task Force (USPSTF) proceeds to consider the magnitude of net benefit to be expected from implementation of the preventive service. Determining net benefit requires assessing both the magnitude of benefits and the magnitude of harms and weighing the two.

The USPSTF classifies benefits, harms, and net benefits on a 4-point scale: "substantial," "moderate," "small," and "zero/negative."

"Outcomes tables" (similar to 'balance sheets') are the USPSTF's standard resource for estimating the magnitude of benefit. These tables, prepared by the topic teams for use at USPSTF meetings, compare the condition specific outcomes expected for a hypothetical primary care population with and without use of the preventive service. These comparisons may be extended to consider only people of specified age or risk groups or other aspects of implementation. Thus, outcomes tables allow the USPSTF to examine directly how the preventive services affects benefits for various groups.

When evidence on harms is available, the topic teams assess its quality in a manner like that for benefits and include adverse events in the outcomes tables. When few harms data are available, the USPSTF does not assume that harms are small or nonexistent. It recognizes a responsibility to consider which harms are likely and judge their potential frequency and the severity that might ensue from implementing the service. It uses whatever evidence exists to construct a general confidence interval on the 4-point scale (e.g., substantial, moderate, small, and zero/negative).

Value judgments are involved in using the information in an outcomes table to rate either benefits or harms on the USPSTF's 4-point scale. Value judgments are also needed to weigh benefits against harms to arrive a rating of net benefit.

In making its determinations of net benefit, the USPSTF strives to consider what it believes are the general values of most people. It does this with greater confidence for certain outcomes (e.g., death) about which there is little disagreement about undesirability, but it recognizes that the degree of risk people are willing to accept to avert other outcomes (e.g., cataracts) can vary considerably. When the USPSTF perceives that preferences among individuals vary greatly, and that these variations are sufficient to make trade-off of benefits and harms a 'close-call', then it will often assign a C recommendation (see the

"Recommendation Rating Scheme" field). This recommendation indicates the decision is likely to be sensitive to individual patient preferences.

The USPSTF uses its assessment of the evidence and magnitude of net benefit to make recommendations. The general principles the USPSTF follows in making recommendations are outlined in Table 5 of the companion document cited below. The USPSTF liaisons on the topic team compose the first drafts of the recommendations and rationale statements, which the full panel then reviews and edits. Recommendations are based on formal voting procedures that include explicit rules for determining the views of the majority.

From: Harris RP, Helfand M, Woolf SH, Lohr KN, Mulrow, CD, Teutsch SM, Atkins D. Current methods of the U.S. Preventive Services Task Force: a review of the process. Methods Work Group, Third U.S. Preventive Services Task Force. Am J Prev Med 2001 Apr; 20(3S): 21-35.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

The U.S. Preventive Services Task Force (USPSTF) grades its recommendations according to one of five classifications (A, B, C, D, or I), reflecting the strength of evidence and magnitude of net benefit (benefits minus harms).

A

The U.S. Preventive Services Task Force (USPSTF) strongly recommends that clinicians provide [the service] to eligible patients. (The USPSTF found good evidence that [the service] improves important health outcomes and concludes that benefits substantially outweigh harms.)

B

The U.S. Preventive Services Task Force (USPSTF) recommends that clinicians provide [the service] to eligible patients. (The USPSTF found at least fair evidence that [the service] improves health outcomes and concludes that benefits outweigh harms.)

C

The U.S. Preventive Services Task Force (USPSTF) makes no recommendation for or against routine provision of [the service]. (The USPSTF found at least fair evidence that [the service] can improve health outcomes but concludes that the balance of benefits and harms is too close to justify a general recommendation.)

D

The U.S. Preventive Services Task Force (USPSTF) recommends against routinely providing [the service] to asymptomatic patients. (The USPSTF found at least fair evidence that [the service] is ineffective or that harms outweigh benefits.)

I

The U.S. Preventive Services Task Force (USPSTF) concludes that the evidence is insufficient to recommend for or against routinely providing [the service]. (Evidence that [the service] is effective is lacking, of poor quality, or conflicting and the balance of benefits and harms cannot be determined.)

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Comparison with Guidelines from Other Groups

External Peer Review

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Peer Review. Before the U.S. Preventive Services Task Force makes its final determinations about recommendations on a given preventive service, the Evidence-based Practice Center and the Agency for Healthcare Research and Quality send a draft systematic evidence review to 4 to 6 external experts and to federal agencies and professional and disease-based health organizations with interests in the topic. They ask the experts to examine the review critically for accuracy and completeness and to respond to a series of specific questions about the document. After assembling these external review comments and documenting the proposed response to key comments, the topic team presents this information to the Task Force in memo form. In this way, the Task Force can consider these external comments and a final version of the systematic review before it votes on its recommendations about the service. Draft recommendations are then circulated for comment from reviewers representing professional societies, voluntary organizations and Federal agencies. These comments are discussed before the whole U.S. Preventive Services Task Force before final recommendations are confirmed.

Recommendations of Others. Recommendations regarding newborn hearing screening from the following groups were discussed: The Joint Committee on Infant Hearing 2000 Position Statement, developed and approved by the American Academy of Audiology, the American Academy of Pediatrics (AAP), the American Speech-Language-Hearing Association (ASHA), the Council on Education of the Deaf, and Directors of Speech and Hearing Programs in State Health and Welfare Agencies; the Centers for Disease Control and Prevention; the National Institutes of Health; the Maternal and Child Health Bureau of the Health Resources and Services Administration (HRSA);; the American College of Obstetricians and Gynecologists; and the British National Coordinating Centre for Health Technology Assessment. It was noted that the American Academy of Family Physicians (AAFP) and the Canadian Task Force on Preventive Health Care are currently reviewing their positions on Universal Newborn Hearing Screening.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The U.S. Preventive Services Task Force (USPSTF) grades its recommendations (A, B, C, D, or I) and the quality of the overall evidence for a service (good, fair, poor). The definitions of these grades can be found at the end of the "Major Recommendations" field.

- The United States Preventive Services Task Force concludes the evidence is insufficient to recommend for or against routine screening of newborns for hearing loss during the postpartum hospitalization. I recommendation

The U.S. Preventive Services Task Force found good evidence that newborn hearing screening leads to earlier identification and treatment of infants with hearing loss. However, evidence to determine whether earlier treatment resulting from screening leads to clinically important improvement in speech and language skills at age 3 years or beyond is inconclusive because of the design limitations in existing studies.

Although earlier identification and intervention may improve the quality of life for the infant and family during the first year of life, and prevent regret by the family over delayed diagnosis of hearing loss, the U.S. Preventive Services Task Force found few data addressing these benefits. The U.S. Preventive Services Task Force could not determine from existing studies whether these potential benefits outweigh the potential harms of false-positive tests that many low-risk infants would experience following universal screening in both high- and low-risk groups.

The U.S. Preventive Services Task Force found good evidence that the prevalence of hearing loss in infants in the newborn intensive care unit (NICU) and those with other specific risk factors (see "Clinical Considerations") is 10 to 20 times higher than the prevalence of hearing loss in the general population of newborns. Both the yield of screening and the proportion of true positive results will be substantially higher when screening is targeted at these high-risk infants, but selective screening programs typically do not identify all infants with risk factors. Evidence that early identification and intervention for hearing loss improves speech, language, or auditory outcomes in high-risk populations is also limited.

Clinical Considerations

- Currently, universal newborn hearing screening is required by law in more than 30 states and is performed routinely in some health care systems in other states. Selective screening of infants in the neonatal intensive care units and those with other risk factors for hearing loss (see below) is conducted in many settings that do not follow a policy of universal screening. Clinicians should be aware of such screening policies in their practice environments.
- Risk factors for sensorineural hearing loss among newborns include neonatal intensive care unit admission for 2 days or more; syndromes known to include hearing loss (e.g., Usher's syndrome, Waardenburg's syndrome);

- family history of childhood sensorineural hearing loss; congenital infections (e.g., toxoplasmosis, bacterial meningitis, syphilis, rubella, cytomegalovirus, herpes virus); and craniofacial abnormalities (especially morphologic abnormalities of the pinna and ear canal).
- If a program for routine hearing screening of newborns is implemented, it should include systematic education to fully inform parents and clinicians about the potential benefits and harms of the testing protocol. Most infants with positive in-hospital screening tests will subsequently be found to have normal hearing, and clinicians should be prepared to provide reassurance and support to parents of infants who need follow-up audiologic evaluation.
 - If any program for newborn hearing screening is implemented, screening should be conducted using a validated protocol, usually requiring 2 screening tests. Equipment used should be well maintained, staff should be thoroughly trained, and quality control programs to reduce avoidable false-positive tests should be in place. Programs should develop protocols to ensure that infants with positive screening tests receive appropriate audiologic evaluation and follow-up after discharge.

Definitions:

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Poor

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CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of evidence supporting each recommendation is identified in the "Major Recommendations" field.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Effectiveness of Early Intervention to Improve Language Outcomes

There are no prospective, controlled studies that directly examine whether newborn hearing screening and earlier intervention result in improved speech, language, or educational development.

Although several retrospective studies have variously concluded that infants entering treatment programs at younger ages, or infants identified in hospitals with universal screening programs, have better long-term language outcomes, all of these studies have significant methodological flaws.

Other Potential Benefits of Screening and Treatment

Because universal newborn hearing screening reduces the average age for intervention by 6 to 9 months, improved hearing or increased prelanguage stimulation over that period might, in themselves, be considered important benefits of newborn hearing screening. In addition, there might be a psychological benefit to parents or to hearing-impaired children of avoiding regret in the future due to the delayed diagnosis and treatment of hearing impairment. However, the U.S. Preventive Services Task Force was unable to identify any evidence that would allow it to assess the magnitude of these potential benefits or determine whether they alone were sufficient to offset the potential harms of screening.

POTENTIAL HARMS

Potential Harm of Screening and Treatment

Because most positive screening tests are false positives, the most likely potential adverse effects of screening are parental anxiety and misunderstanding, and labeling of normal infants as hearing-impaired until the definitive diagnosis can be made months later. Even a small increased risk of these effects could have a large impact on the net benefit of a screening program. In low-risk populations, there are 25 to 50 false positives for each true case of hearing impairment. In existing newborn hearing screening programs, 13% to 31% do not follow up for definitive testing, which might allay concerns about the baby's health.

Findings from studies that evaluated parental anxiety are mixed. In the largest controlled trial of screening, parents whose infants were screened had similar anxiety and attitudes as parents whose infants were not screened. In another survey, 98% of parents said they would give permission for screening, 95% said they would prefer screening even if the baby failed, and 85% said that anxiety caused by failing a screening test would be outweighed by the potential benefit of early detection. In other studies, false-positive results produced significant or lasting anxiety in 3% to 14% of parents, even after follow-up testing. No studies have evaluated whether parental anxiety has any long-term effect on parent-child interaction.

Because definitive diagnoses may take months to confirm, false-positive diagnosis of sensorineural hearing loss may occasionally lead to unnecessary intervention in an infant who hears normally. In one large screening trial, the initial audiologic diagnosis was incorrect in 2 of 27 infants diagnosed with sensorineural hearing loss (7%), and the infants proved to have normal hearing when re-examined at age 4 months or 10 months.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

The yield of newborn hearing screening is comparable to or higher than that of other well-accepted newborn screening programs. To identify one infant with moderate to severe hearing loss, newborn hearing screening would require screening an estimated 600 infants. Relative to selective screening, universal newborn hearing screening requires screening an estimated 1,400 infants to identify one additional affected infant, yields that are comparable to or better than those for newborn screening programs for other disorders, including hemoglobinopathy and phenylketonuria. Thus, if the effects of screening and subsequent treatment on longer-term language outcomes could be confirmed, the cost-effectiveness of newborn hearing screening might be equal or superior to that of many other newborn screening services.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

The experiences of the first and second U.S. Preventive Services Task Force (USPSTF), as well as that of other evidence-based guideline efforts, have highlighted the importance of identifying effective ways to implement clinical recommendations. Practice guidelines are relatively weak tools for changing clinical practice when used in isolation. To effect change, guidelines must be coupled with strategies to improve their acceptance and feasibility. Such strategies include enlisting the support of local opinion leaders, using reminder systems for clinicians and patients, adopting standing orders, and audit and feedback of information to clinicians about their compliance with recommended practice.

In the case of preventive services guidelines, implementation needs to go beyond traditional dissemination and promotion efforts to recognize the added patient and clinician barriers that affect preventive care. These include clinicians' ambivalence about whether preventive medicine is part of their job, the psychological and practical challenges that patients face in changing behaviors, lack of access to health care or of insurance coverage for preventive services for some patients, competing pressures within the context of shorter office visits, and the lack of organized systems in most practices to ensure the delivery of recommended preventive care.

Neither the resources nor the composition of the U.S. Preventive Services Task Force (USPSTF) equip it to address these numerous implementation challenges, but a number of related efforts seek to increase the impact of future U.S. Preventive Services Task Force (USPSTF) reports. The U.S. Preventive Services Task Force (USPSTF) convened representatives from the various audiences for the [Guide](#) - clinicians, consumers and policy makers from health plans, national organizations and Congressional staff - about how to modify the content and format of its products to address their needs. With funding from the Robert Wood Johnson Foundation, the U.S. Preventive Services Task Force (USPSTF) and Community Guide effort have conducted an audience analysis to further explore implementation needs. The [Put Prevention into Practice](#) initiative at the Agency for Healthcare Research and Quality (AHRQ) has developed office tools such as patient booklets, posters, and handheld patient mini-records, and a new implementation guide for state health departments.

Dissemination strategies have changed dramatically in this age of electronic information. While recognizing the continuing value of journals and other print formats for dissemination, the Agency for Healthcare Research and Quality will make all U.S. Preventive Services Task Force (USPSTF) products available through its [Web site](#). The combination of electronic access and extensive material in the public domain should make it easier for a broad audience of users to access U.S. Preventive Services Task Force (USPSTF) materials and adapt them for their local needs. Online access to U.S. Preventive Services Task Force (USPSTF) products also opens up new possibilities for the appearance of the third edition of the Guide to Clinical Preventive Services. Freed from having to serve as primary repository for all of U.S. Preventive Services Task Force work, the next Guide may be much slimmer than the almost 1000 pages of the second edition.

To be successful, approaches for implementing prevention have to be tailored to the local level and deal with the specific barriers at a given site, typically requiring the redesign of systems of care. Such a systems approach to prevention has had notable success in established staff-model health maintenance organizations, by addressing organization of care, emphasizing a philosophy of prevention, and altering the training and incentives for clinicians. Staff-model plans also benefit from integrated information systems that can track the use of needed services and generate automatic reminders aimed at patients and clinicians, some of the most consistently successful interventions. Information systems remain a major challenge for individual clinicians' offices, however, as well as for looser affiliations of practices in network-model managed care and independent practice associations, where data on patient visits, referrals and test results are not always centralized.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Staying Healthy

IOM DOMAIN

Effectiveness

Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Newborn hearing screening: recommendations and rationale. Am Fam Physician 2001 Dec 15;64(12):1995-9. [20 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1996 (revised 2001 Dec)

GUIDELINE DEVELOPER(S)

United States Preventive Services Task Force - Independent Expert Panel

GUIDELINE DEVELOPER COMMENT

The U.S. Preventive Services Task Force (USPSTF) is a Federally-appointed panel of independent experts. Conclusions of the USPSTF do not necessarily reflect policy of the U.S. Department of Health and Human Services (DHHS) or DHHS agencies.

SOURCE(S) OF FUNDING

United States Government

GUIDELINE COMMITTEE

U.S. Preventive Services Task Force (USPSTF)

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

The U.S. Preventive Services Task Force (USPSTF) consists of experts from the specialties of family medicine, pediatrics, internal medicine, obstetrics and gynecology, geriatrics, preventive medicine, public health, behavioral medicine, and nursing. Members of the Task Force were selected from more than 80 nominees, based on recognized expertise in prevention, evidence-based medicine, and primary care.

Names of members: Alfred O. Berg, MD, MPH (Chair); Janet D. Alan, PhD, RN, CS, FAAN (Vice-Chair); Paul Frame, MD; Charles J. Homer, MD, MPH; Mark S. Johnson, MD, MPH; Jonathan D. Klein, MD, MPH; Tracy A. Lieu, MD, MPH; Cynthia D. Mulrow, MD, MSc; Carole Tracy Orleans, PhD; Jeffrey F. Peipert, MD, MPH; Nola J Pender, PhD, RN; Albert L. Siu, MD, MSPH; Steven M. Teutsch, MD, MPH; Carolyn Westhoff, MD, MSc; Steven H Woolf, MD, MPH

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

The U.S. Preventive Services Task force has an explicit policy concerning conflict of interest. All members and evidence-based practice center (EPC) staff disclose at each meeting if they have an important financial conflict for each topic being discussed. Task Force members and EPC staff with conflicts can participate in discussions about evidence, but members abstain from voting on recommendations about the topic in question.

From: Harris RP, Helfand M, Woolf SH, Lohr KN, Mulrow, CD, Teutsch SM, Atkins D. Current methods of the U.S. Preventive Services Task Force: a review of the

process. Methods Work Group, Third U.S. Preventive Services Task Force. Am J Prev Med 2001 Apr; 20(3S): 21-35.

GUIDELINE STATUS

This is the current release of the guideline.

This release updates a previously published guideline: U.S. Preventive Services Task Force. Screening for hearing impairment. In: Guide to clinical preventive services. 2nd ed. Baltimore (MD): Williams & Wilkins; 1996.

GUIDELINE AVAILABILITY

Electronic copies: Available from the [U.S. Preventive Services Task Force \(USPSTF\) Web site](#). Also available from the [National Library of Medicine's Health Services/Technology Assessment Text \(HSTAT\) Web site](#).

Print copies: Available from the Agency for Healthcare Research and Quality Publications Clearinghouse. For more information, go to <http://www.ahrq.gov/news/pubsix.htm> or call 1-800-358-9295 (U.S. only).

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

Evidence Review:

- Thompson DC, McPhillips H, Davis RL, Lieu TA, Homer CJ, and Helfand M. Universal newborn hearing screening: A summary of the evidence. JAMA 2001 Oct 24/31; 286(16):2000-10 [76 references].
- Helfand M, Thompson DC, Davis R, McPhillips H, Lieu TA, Homer CJ. Newborn hearing screening. A summary of the evidence for the U.S. Preventive Services Task Force. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ), 2001. [65 references]. Electronic copies are available from the [U.S. Preventive Services Task Force \(USPSTF\) Web site](#).
- Helfand M, Thompson DC, Davis R, McPhillips H, Homer CJ, Lieu TA. Newborn hearing screening: Systematic evidence review. Pub. No. AHRQ02-S001. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ), 2001. (Systematic evidence review; no. 5) [105 references]. Electronic copies are available in a downloadable format from the [U.S. Preventive Services Task Force \(USPSTF\) Web site](#).

Background Articles:

- Woolf SH, Atkins D. The evolving role of prevention in health care: contributions of the U.S. Preventive Services Task Force. Am J Prev Med 2001 Apr; 20(3S): 13-20.
- Harris RP, Helfand M, Woolf SH, Lohr KN, Mulrow, CD, Teutsch SM, Atkins D. Current methods of the U.S. Preventive Services Task Force: a review of the process. Methods Work Group, Third U.S. Preventive Services Task Force. Am J Prev Med 2001 Apr; 20(3S): 21-35.

- Saha S, Hoerger TJ, Pignone MP, Teutsch SM, Helfand M, Mandelblatt. The art and science of incorporating cost effectiveness into evidence-based recommendations for clinical preventive services. Cost Work Group of the Third U.S. Preventive Services Task Force. Am J Prev Med 2001 Apr;20(3S):36-43.

Electronic copies: Available from the [USPSTF Web site](#).

The following is also available:

- A step-by-step guide to delivering clinical preventive services: a systems approach. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ), 2001. 189 p. (Pub. No. APPIP01-0001). Electronic copies available from the [AHRQ Web site](#).

Print copies: Available from the Agency for Healthcare Research and Quality Publications Clearinghouse. For more information, go to <http://www.ahrq.gov/news/pubsix.htm> or call 1-800-358-9295 (U.S. only).

The Preventive Services Selector, an application for Palm Pilots and other PDA's, is also available from the [AHRQ Web site](#).

PATIENT RESOURCES

The following is available:

- The Pocket Guide to Good Health for Adults. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2003.

Electronic copies: Available from the [U.S. Preventive Services Task Force \(USPSTF\) Web site](#). Copies also available in Spanish from the [USPSTF Web site](#).

Print copies: Available from the Agency for Healthcare Research and Quality (AHRQ) Publications Clearinghouse. For more information, go to <http://www.ahrq.gov/news/pubsix.htm> or call 1-800-358-9295 (U.S. only).

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

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